

WHAT IS CLAIMED IS:

1. A process for preparing cyclohexenyl or alkenyl aromatic compounds comprising alkylation of a cyclohexane or aromatic compound; dehydrogenation
5 of the alkylated cyclohexane or aromatic compound to form a process stream including a cyclohexenyl or alkenyl aromatic compound; and separating the process stream into a cyclohexenyl or alkenyl aromatic compound rich fraction and a cyclohexane or aromatic compound rich fraction, wherein the process further comprises adding nitrogen-containing compounds at one point in the
10 process and using water to extract the nitrogen-containing compounds or, break down products of the nitrogen-containing compounds, from the cyclohexane or aromatic compound rich fraction at another point in the process.
2. A process for preparing styrene comprising alkylating benzene to form
15 ethylbenzene, dehydrogenating ethylbenzene to form a process stream containing styrene, unreacted ethylbenzene, benzene and toluene products, separating the process streams into styrene, benzene and toluene fractions, and recycling the benzene fraction back into the process wherein the process further comprises adding a nitrogen-containing compound at one point in the process
20 and using water to extract the nitrogen-containing compounds, or break down products of the nitrogen-containing compounds, from the benzene fraction at another point in the process.
3. The process of Claim 2 wherein the nitrogen-containing compounds, or
25 break down products of the nitrogen-containing compounds, are extracted by intimately contacting the benzene fraction with water in an amount of from about 0.1 percent to about 10 percent by weight of benzene.

4. The process of Claim 3 further comprising removing the water containing nitrogen compounds, or break down products of the nitrogen-containing compounds, from the benzene fraction such that no more than about 900 ppm
5 water remains, prior to or after mixing the recycled benzene fraction with fresh benzene prior to alkylation.
5. The process of Claim 2 wherein the benzene fraction is contacted with water in an amount of from about 0.5 percent to about 4 percent by weight of
10 benzene.
6. The method of Claim 2 wherein the water is introduced immediately after separation of the benzene, styrene and toluene fractions.
- 15 7. The method of Claim 2 wherein the water is introduced into the system as water entrained in feedstocks to the process.
8. The process of Claim 6 wherein the water is removed as a liquid via drying or distillation.
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9. The process of Claim 7 wherein the water is removed as a liquid via drying or distillation.
10. The process of Claim 2 wherein the water is introduced concurrent with
25 the mixing of fresh and recycled benzene and the water is removed after alkylation in a drying column.

11. The process of Claim 2 wherein the nitrogen-containing compounds are stabilizers or neutralizers or break down products of these compounds.
12. In a process for preparing cyclohexenyl or alkenyl aromatic compounds,
5 wherein the process includes an alkylation of a cyclohexane or aromatic compound; a dehydrogenation of the alkylated cyclohexane or aromatic compound to form a process stream; and a separation of the process stream into a cyclohexenyl or alkenyl aromatic compound rich component and a cyclohexane or aromatic compound rich component; and the process also
10 includes the use of nitrogen-containing compounds, the improvement comprising using water to extract the nitrogen-containing compounds from the cyclohexane or aromatic compound rich component.
13. The process of Claim 12 wherein the nitrogen-containing compounds, or
15 break down products of the nitrogen-containing compounds, are extracted by intimately contacting the cyclohexane or aromatic compound rich component with water in an amount of from about 0.1 percent to about 10 percent by weight of the cyclohexane or aromatic compound rich component.
- 20 14. The process of Claim 13 wherein the cyclohexane or aromatic compound rich component is contacted with water in an amount of from about 0.5 percent to about 4 percent by weight of the cyclohexane or aromatic compound rich component.
- 25 15. The process of Claim 13 further comprising removing the water containing nitrogen compounds, or break down products of the nitrogen-containing compounds, from the benzene fraction such that no more than about 900 ppm

water remains, prior to or after mixing the recycled benzene fraction with fresh benzene prior to alkylation.

16. The process of Claim 12 wherein the cyclohexenyl or alkenyl aromatic
5 compound is styrene.